

L I F E   J A C K E T

This invention relates to life jackets particularly those incorporating one or more inflatable buoyancy chambers.

5        Traditionally, life jackets of this type are provided with a chest buoyancy chamber for supporting the body of the wearer and a head buoyancy chamber for supporting the head of the wearer. These chambers are often combined in a single chamber which extends over  
10       the chest and around the neck of the wearer. The chamber has a simple aperture through which the head of the wearer passes.

      These known life jackets have a number of disadvantages. The size of the head aperture tends to increase when the jacket is inflated. This results in  
15       a head aperture which offers limited support to the head of the wearer and in which the head can roll and drop. If unconscious the movement of the wearer's head can cause the chin and mouth of the wearer to drop into the water, possibly to cause drowning. Also  
20       the forming of the head aperture causes much material wastage.

      According to the present invention there is provided a life jacket comprising main buoyancy  
25       chamber means defining a head opening through which the head of the wearer is passed, the life jacket having one or more neck chambers which when inflated reduce the size of the head opening.

      Preferably two neck chambers are provided and have portions for disposition, in use, on either  
30       lateral side of the neck of the wearer. Conveniently, the two neck chambers communicate with the main buoyancy chamber means.

      In one preferred arrangement the main buoyancy  
35       chamber means comprises a single main buoyancy chamber having two ends which are joined so as to complete and enclose the neck opening. Preferably the neck

chambers are constituted by separate chamber portions which were disposed between the ends of the main buoyancy chamber before joining, the joining of the ends causing the neck chambers to be moved out of the general plane of the deflated life jacket. Also, when inflated the central plane through each neck chamber is generally perpendicular to the general central plane through the main buoyancy chamber. In addition the central plane through each neck chamber may be angled so as to lift and support against movement of the head of the wearer.

Embodiments of the invention will now be described in more detail. The description makes reference to the accompanying drawings in which:

Figure 1 is a front view of an unfinished life jacket according to the present invention,

Figure 2 is a front view of a basic finished, deflated life jacket according to the present invention,

Figure 3 is a front view of the life jacket of figure 2 in an inflated condition.

Figure 4 is a side view of the figure 3 arrangement,

Figure 5 is a rear view of the figure 3 arrangement,

Figure 6 shows the figure 3 arrangement in use, and

Figures 7, 8 and 9 show front, side and rear views of a fully equipped life jacket according to the present invention.

In figures 1 to 6 there is shown a life jacket 10 which comprises a single inflatable buoyancy chamber. The life jacket is made from a suitable flexible material and comprises identical front and back sheets 11, 12 which are held together along suitable seams 13, 14 using conventional techniques.

The sheets 11, 12 are generally speaking rectangular defining a generally U-shaped main buoyancy chamber 15 which communicates with left and right neck chambers 16, 17 which are separated along line 18.

5           Between the upper ends of the neck chambers 16, 17 and the main chamber 15 are tabs 18, 19 defined between parts of a seam such that the tabs are outside the buoyancy chambers proper. Between the lower parts of the neck chambers 16, 17 and the main chambers 15  
10           are seamed holes 20, 21, the purpose of which will be discussed later. Also there is an aperture 22 which is the basis for the head aperture of the finished life jacket.

15           To finish the life jacket the tabs 18, 19 are brought together and joined together. This may be by stitching, gluing, riveting or any other suitable means. The result of this connection is that the deflated life jacket 10 does not lie truly flat anymore, but is slightly crumpled as shown more  
20           clearly in figure 2. Also the neck chambers 16, 17 are now forced to lie out of the general plane of the life jacket, which also tends to open up the head aperture 22.

25           When the life jacket is inflated the neck chambers 16, 17 tend to reduce the size of the head aperture 22. The holes 20, 21 act as effective hinges between the neck chambers and main chamber and their angle relative to the angle of the tabs 18, 19 cause  
30           the neck chambers to become angled when viewed from the front.

          In use, therefore, the neck chambers 16, 17 constitute pillow sections either side of the neck of the wearer and tend to push the jaw and the head of  
35           the wearer upwards as shown in figure 6. This action increases the freeboard (distance from mouth to water level) of the wearer.

In addition, the neck chambers 16, 17 support the head of the wearer and prevent significant movement of the head if the wearer is unconscious. Without the neck chambers 16, 17 the head of the wearer could move into a slumped position in which the wearer could drown.

Another advantage of the illustrated arrangement is that the additional neck chambers 16, 17 are formed from material which would normally be scrapped when the head aperture 22 was made. The arrangement, therefore, puts otherwise scrap material to effective use and minimises actual scrap.

It will be appreciated that other suitable arrangements will be possible using the above principles. For example, a single neck chamber could be provided in place of the two neck chambers discussed above, or even more could be provided according to particular requirements. Also the geometry of the life jacket described above could be changed to provide different support characteristics. For example, the angle of the tabs 18, 19 and holes 20, 21 could be varied to change the action of the neck chambers.

Also the neck chambers need not communicate with the main chamber, but may have separate inflation means.

Figures 7, 8 and 9 show a more fully equipped life jacket 100 which shows attachment straps 101, CO<sub>2</sub> inflation cylinders, top up mouth tubes 102, photoluminescent patches 103 and whistle 104. Such items are common in life jacket design.

The life jacket could also be adapted to have two or more main buoyancy chambers or to laterally divide the main chamber below the head aperture. This may result in a more flexible design which moves with the wearer in waves.

CLAIMS

1. A life jacket comprising main buoyancy chamber means defining a head opening through which the head of the wearer is passed, the life jacket having one or more neck chambers which when inflated reduce the size of the head opening.  
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2. A life jacket as claimed in claim 1 wherein two neck chambers are provided and have portions for disposition, in use, on either lateral side of the neck of the wearer.  
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3. A life jacket as claimed in claim 2 wherein the two neck chambers communicate with the main buoyancy chamber means.  
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4. A life jacket as claimed in claims 2 or 3 wherein the main buoyancy chamber means comprises a single main buoyancy chamber having two ends which are joined so as to complete and enclose the neck opening.  
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5. A life jacket as claimed in claim 4 wherein the neck chambers are constituted by separate chamber portions which were disposed between the ends of the main buoyancy chamber before joining, the joining of the ends causing the neck chambers to be moved out of the general plane of the deflated life jacket.  
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6. A life jacket as claimed in claim 5 wherein when inflated the central plane through each neck chamber is generally perpendicular to the general central plane through the main buoyancy chamber.  
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7. A life jacket as claimed in claim 6 wherein the central plane through each neck chamber is angled so as to lift and support against movement of the head of the wearer.

5 8. A method of making a life jacket comprising the  
steps of superposing two generally U-shaped  
layers of flexible water resistant material,  
sealing the periphery to form an inflatable  
10 chamber, providing seam means towards each free  
end of the U-shaped layers to define two sub-  
chambers between the free ends of a generally U-  
shaped main chamber, joining said seam means such  
that the sub-chambers are moved out of the  
15 general plane of the main chamber and an enclosed  
head opening is formed whereby, when the life  
jacket is inflated, the sub-chambers reduce the  
size of the head opening.

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**Patents Act 1977**  
**Examiner's report to the Comptroller under**  
**Section 17 (The Search Report)**

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GB 9205261.2

**Relevant Technical fields**

(i) UK CI (Edition L ) B7A (AAJ)

(ii) Int CI (Edition 5 ) B63C

Search Examiner

B J PRICE

**Databases (see over)**

(i) UK Patent Office

(ii) ONLINE DATABASES: WPI

Date of Search

6 APRIL 1993

Documents considered relevant following a search in respect of claims 1-8

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X Y	GB 2188009 A (RFD LTD) see whole document	1 to 4
X	GB 2082979 A (SWITLIK) see partic lines 120-130 page 2	1 and 2
X	GB 2068846 A (SWITLIK) see cells 14	1 and 2
Y	GB 2060510 A (BERNHARDT) see lines 66-70 page 2	6
X	GB 1587770 A (RFD LTD) whole document	1 to 4
X	GB 1503975 A (MARTIN) see whole document	1
X	GB 1014214 A (FRANKENSTEIN) see air pocket G	1
	GB 0679610 A (RFD LTD) see panel c	1

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Category	Identity of document and relevant passages	Relevant to claim(s)

**Categories of documents**

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A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

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